Determination of tocopherol and carotenoid contents in ST muscle of suckling lambs using fresh or lyophilised muscle

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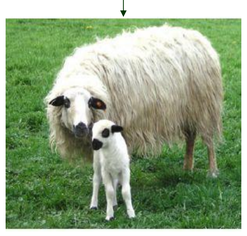
A percentage of lamb consumers demand meat from grass-fed animals, however, they want guarantees of the animal's diet. Carotenoids can be used to trace forage-feeding but the analysis is expensive. Lyophilisation might reduce the time and quantities of reactives used in carotenoids and tocopherols analyses.

Objective: determine the content of carotenoids and tocopherols in meat of suckling lambs of grazing and indoors systems in lyophilised and fresh meat

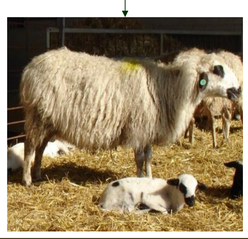
Materials and Methods

39 Churra Tensina pairs of ewe-lamb

From lambs' birth to slaughter (10-12 kg LW)



Grazing



Hay

Ewes: + 300 g/d concentrate

Sampling:
- **feedstuffs: weekly**
- ***Semitendinosus* (ST) muscles** → **Frozen at -80 ºC**; **Lyophilised & frozen at -80 ºC**

Extraction:
- **feedstuffs with acetone**
- **ST muscle**

	Lyophilised	Fresh
Muscle, g	0.1	0.4
Ethyl alcohol, ml	0.1	0.4
n-hexane, ml	1	1
n-hexane, ml	1	1

Analyses of carotenoids and tocopherols: HPLC

Results

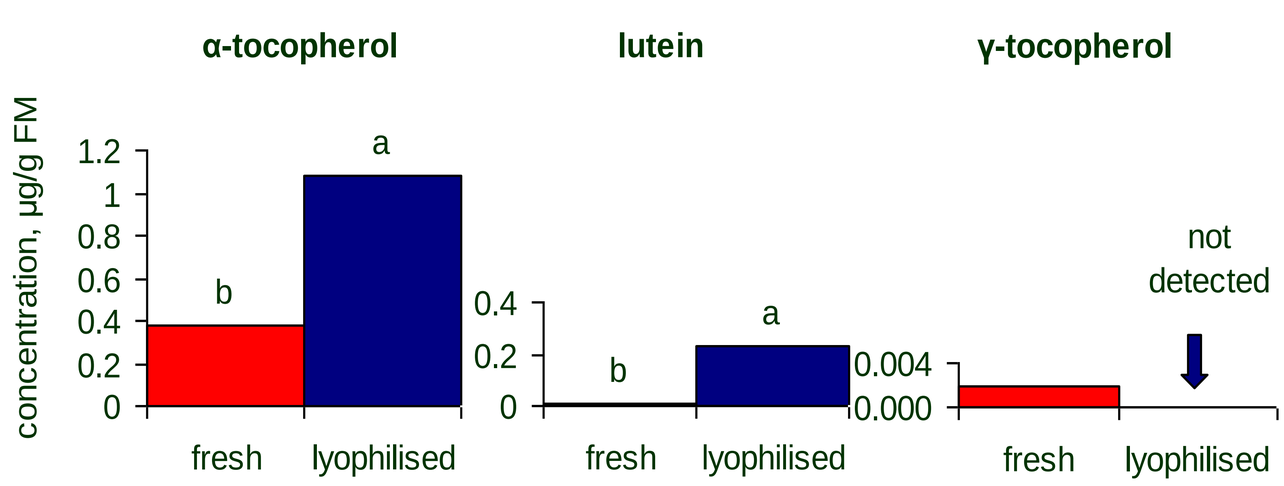
Feedstuffs

Content, µg/g DM	Pasture	Hay	Concentrate
β-carotene	723	23.7	n.d.
Lutein	570	100	1.0
α-tocopherol	147	10.9	9.3
γ-tocopherol	6.6	1.1	6.2

Greater contents

n.d.: not detected

Lyophilisation increased α-tocopherol and lutein contents

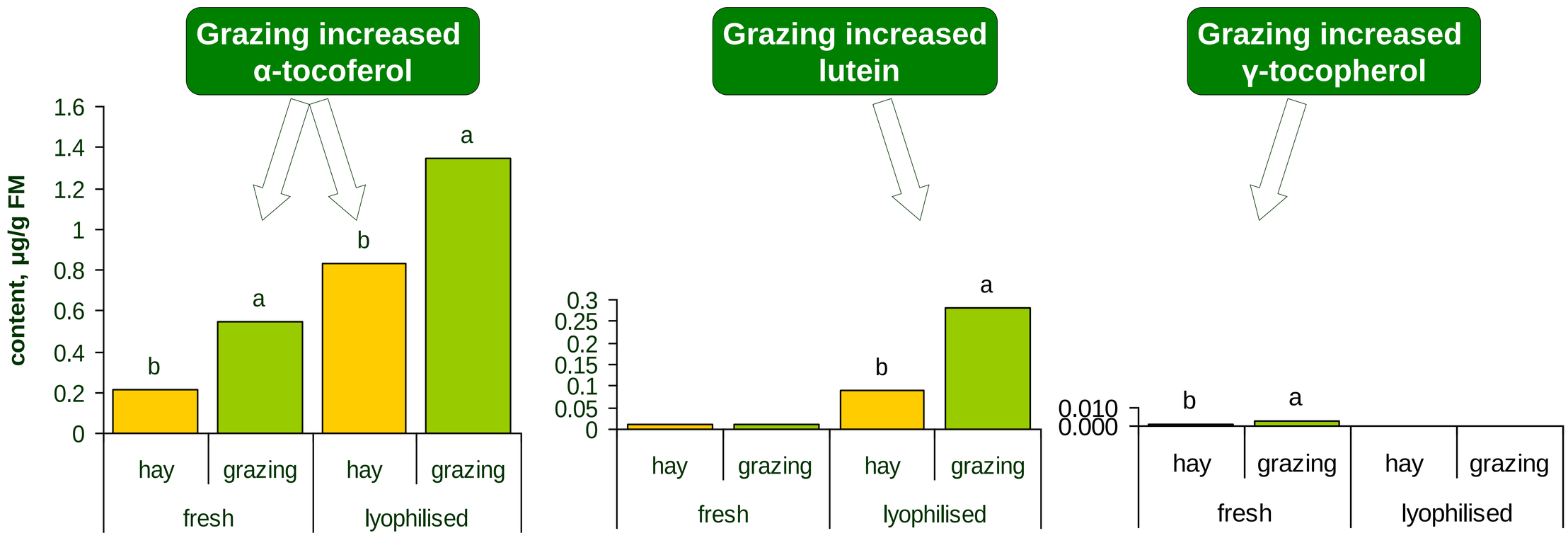


Effect of the type of forage

Grazing increased α-tocoferol

Grazing increased lutein

Grazing increased γ-tocopherol



Conclusions

Lutein and α-tocopherol contents in muscle could be used as markers of grazing in ovine. The determination in lyophilised muscle was more appropriate than in fresh muscle

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